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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,767

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EXAMINER

SHEVIN, MARK L

ART UNIT

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1793

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,767	Applicant(s) SHINDO, YUICHIRO	
	Examiner Mark L. Shevin	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 10-15, 20 and 23-29 is/are pending in the application.
- 4a) Of the above claim(s) 3-4, 10-15, 20, and 23-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 1-4, 10-15, 20, and 23-29, filed June 3rd, are currently under examination. Claims 5-9, 16-19, and 21-22 are cancelled, claims 3-4, 10-15, 20, and 23-25 are withdrawn, and claims 26-29 are new.

Terminal Disclaimer

2. The terminal disclaimers filed on June 3rd, 2008 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/595,660 and 11/994,167 has been reviewed and is accepted. Thus, the terminal disclaimers have been recorded.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. **Claims 1-2 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shindo** (US 2003/0062261 A1).

Shindo is drawn to high purity zirconium or hafnium with minimal impurities (Abstract). Shindo discloses in Example 2, beginning at para 0120 a high-purity hafnium sputtering target (claim 4 and Title) with 4N (99.99%) purity level excluding gas components such as carbon, oxygen, and nitrogen (para 0133). Oxygen and carbon are present at less than 500 ppm (claim 6). Table 4 at para 0089 discloses hafnium with a carbon content of 30 ppm, nitrogen less than 10 ppm, and oxygen at 100 ppm.

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(Table 4 at para 0089). Fe, Cr, and Ni are present at less than 10 ppm (Table 4 at para 0089 and Table 4 at para 0131).

Shindo thus teaches a sputtering target or thin formed therefrom made of a high-purity hafnium material with a 4N purity level excluding gas components of carbon, oxygen, and nitrogen. Examples of hafnium are taught with impurities within the claimed ranges and Shindo further teaches that the zirconium content of the high-purity hafnium material should be 0.5 wt% (5000 wt ppm) or less (claim 1). The disclosed zirconium content thus overlaps the range claimed in claim 1 of the instant application and establishes a *prima facie* case of obviousness with Shindo (See MPEP 2144.05, para I: In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists).

Thus it would have been obvious to one of ordinary skill in the metallurgical arts at the time the invention was made, taking the disclosure of Shindo as a whole, to produce the hafnium target of claims 1 and 2 as one could optimize the prior art ranges taught by Shindo to form a high-purity hafnium material.

Regarding the amendment to claim 1, the changing of "thin filmed" to "thin film" does not change the scope of the claim as the Examiner had interpreted thin filmed as meaning thin film.

Regarding claims 27-29, Shindo taught that a high-purity hafnium of 4N (99.99%) can be manufactured (para 0060). Furthermore, claims 4 and 6 disclose a high-purity hafnium sputtering target or thin film with a zirconium content of 0.5 wt% (5000 ppm) or less, which includes hafnium sputtering targets or thin films of 4N and higher purity,

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including 4N5, 5N, and 6N purity. The oxygen, carbon, and nitrogen components are present at less than 500 pm (claim 5) and the content of elements other than gas components and Zr is limited to less than 100 ppm (claim 4).

Thus it would have been obvious to one of ordinary skill in the metallurgical arts at the time the invention was made, taking the disclosure of Shindo as a whole, to produce the hafnium target of claims 27-29 as one could optimize the prior art ranges taught by Shindo to form a high-purity hafnium material.

Response to Applicant's Arguments:

4. Applicant's arguments filed June 3rd, 2008ly considered but they are not persuasive.

Applicants assert (p. 8, para 7) that the prior art reference of Shindo (US 2003/0062261 A1) "teaches away" from the present invention in that it accepts zirconium content and states that it is not a problem.

In response, Shindo nevertheless teaches that zirconium content of the high-purity hafnium material should be 0.5 wt% (5000 wt ppm) or less (claim 1). The disclosed Zr content still overlaps the range of instant claim 1 and thus a prima facie case of obviousness is maintained.

Applicants assert (p. 9, para 1 to p. 10, para 1) that the range of lower than 2400 ppm Zr in the Hafnium material is not enabled and thus cannot be relied upon as overlapping.

In response, the Examiner notes that issued patents, by law (35 U.S.C. 282), are presumed to be valid as well as enabled (MPEP 2121, I).

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Furthermore, from MPEP 2164.02:

Compliance with the enablement requirement of 35 U.S.C. 112, first paragraph, does not turn on whether an example is disclosed. An example may be "working" or "prophetic." A working example is based on work actually performed. A prophetic example describes an embodiment of the invention based on predicted results rather than work actually conducted or results actually achieved.

Shindo discloses applicant's hafnium purity in the claims cited above and is not limited by the working examples cited by Applicants. Furthermore, Applicants' arguments at this point are in effect stating unequivocally that the claimed subject matter of the prior Shindo patent is not enabled.

Lastly, as a final note, from MPEP 2144.04, VII:

Pure materials are novel *vis-à-vis* less pure or impure materials because there is a difference between pure and impure materials. Therefore, the issue is whether claims to a pure material are unobvious over the prior art. *In re Bergstrom*, 427 F.2d 1394, 166 USPQ 256 (CCPA 1970). Purer forms of known products may be patentable, but the mere purity of a product, by itself, does not render the product unobvious. *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989).

Factors to be considered in determining whether a purified form of an old product is obvious over the prior art include whether the claimed chemical compound or composition has the same utility as closely related materials in the prior art, and whether the prior art suggests the particular form or structure of the claimed material or suitable methods of obtaining that form or structure.

Pertinent Prior Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sato: US 6,352,628 B2

Rosenberg: US 2002/0194953 A1

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

-- Claims 1-2 and 26-29 are finally rejected

-- No claims are allowed

The rejections above rely on the references for all the teachings expressed in the texts of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy M. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Mark L. Shevin/

Examiner, Art Unit 1793

/Roy King/

Supervisory Patent Examiner, Art Unit 1793

August 23rd, 2008

10-565,767